11. Semiconductor sensor with a pixel structure (1), in which a capacitance is designed to each pixel that stores the charge and converts it into voltage, that is readable if required, and the pixel structure (1) is mainly completely covered with a conductive layer (11) characterized in that the sensor is designed for direct detection of electrons and that gaps (22) are assembled between the pixel surface coating (11) of each single pixel, the surface of the gaps (22) between the pixels being covered with a second conductive layer (21) that is assembled in an insulated way from the pixel surface coatings (11).

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12. Semiconductor sensor according to claim 11, characterized by the pixel surface coatings (11) and the second conductive layer (21) consisting of metal or any other conductive, light-impervious material.

13. Semiconductor sensor according to claim 12, characterized by the pixel surface coatings (11) and the second conductive layer (21) consisting of aluminum.

14. Semiconductor sensor according to claim 11, characterized by the second conductive layer (21) being designed as capacitor electrode.

15. Semiconductor sensor according to claim 11, characterized by a potential being applied to the second conductive layer (21).

16. Semiconductor sensor according to claim 11, characterized by the detection surface of the sensor being provided with an electron-intensifying coating (5) and transit channels (54) to the pixel surfaces being intended.

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17. Semiconductor sensor according to claim 16, characterized by the electron-intensifying coating (5) being provided with a conductive thin layer (52, 53) each on the upper and lower side, to which a electric potential is applied.

18. Semiconductor sensor according to claim 11, characterized by neighboring pixel surfaces (11) having different potential.

19. Use of a semiconductor sensor according to claim 11, assembled in a vacuum system with photo cathode which converts photons into electrons in an image-orientated way.

20. Use according to claim 19, the vacuum system being equipped with one or more multi-channel-plates for the intensification of the electron flow.